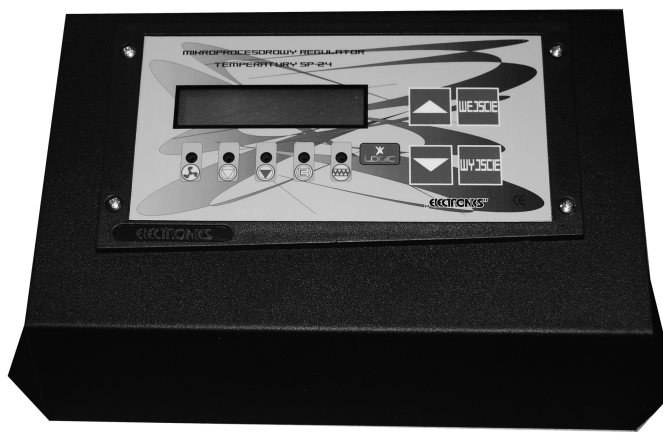
„ELECTRONICS"

MICROPROCESSOR TEMPERATURE CONTROLLER

SP-24

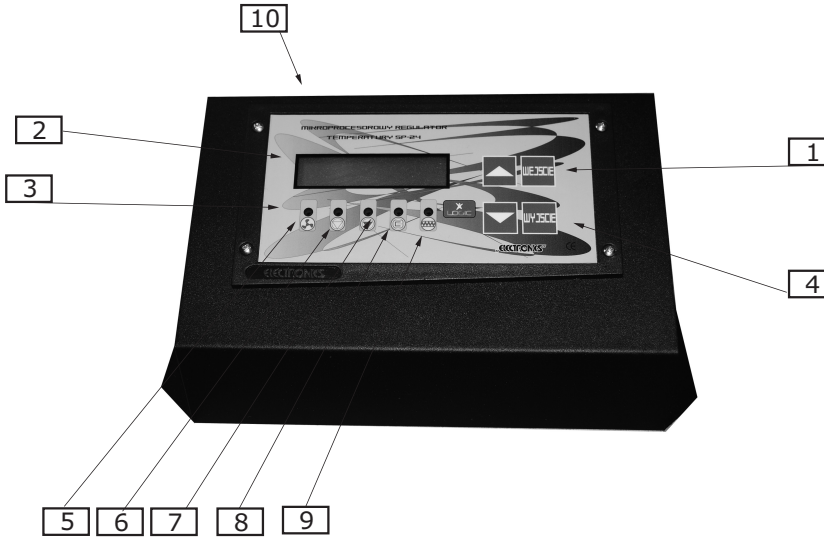
LOGIC



SERVICE MANUAL
WARRANTY CARD

CE

1. Front panel description



Controller view with marked functions

1. Turning on (hold ENTER button for 2 sec.).
2. LCD display.
3. Indicator lights.
4. Device control buttons.
5. Airflow start up indicator.
6. Central heating pump start up indicator.
7. Hot service water pump start up indicator.
8. Floor pump start up indicator.
9. Loader start up indicator.
10. 7A fuse.

2. Application

Controller is equipped with innovative, intelligent Logic control system. This system consists in automatic adjustment of boiler power to current operating conditions. All regulation process is based on measurement of central heating temperature. Due to innovative solution enabling optimal fuel combustion in the boiler, it has the effect of reduction of harmful oxides emission into the atmosphere. With proper oxides aftercombustion and no overshoots , boiler equipped with our device can use up to 30% less fuel than standard solutions.

3. Controller operation

To start up the controller hold ENTER button. After controller start up, main page with following information is displayed on LCD:

Central heating (CH) temperatures - current and set up
Hot service water (HSW) temperatures - current and set

From the main page you have the access to several functions, pressing (▲) enters into central heating temperature adjusting mode, you set up desired temperature with (▼) and (▲). When temperature decreases below 35ºC (--) and ENTER button is pressed, central heating pump turns off. Controller enters SUMMER MODE, with only hot service water function.

However, if (▼) is pressed as first, you enter into setting up hot service water temperature. By pressing (▲) and (▼) you set up desired temperature. When temperature decreases below 35ºC (--) and ENTER button is pressed, hot service water pump turns off.

Caution!!!
If installation is not equipped wit hot service water pump you should turn off water heating function.

Pressing ENTER button confirms selected parameter and pressing EXIT button exits without saving previously made changes.

CH Temperature
Blower power

FUNCTIONS

- **MANUAL OPERATION** function is to fire up the boiler, it enables independent start up of controller

Pressing ENTER button turns on one of the outputs. With (▲) and (▼) you change output to be turned on or off. Pressing EXIT returns to set up menu.

- **HSW hysteresis** that function is to set up service water hysteresis, it consists in delaying HSW pump start up by set up number of degrees, i.e. hystheresis 2°, set up temperature 50°C - pump shall start up when service water temperature decreases to 48°C. This function works in HSW priority and summer mode.

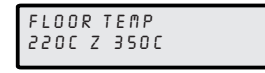
- **CH/HSW PRIORITY**

- **HSW PRIORITY HSW** pump starts up and works until achieves set up temperature. When services water reaches set up temperature HSW pump turns off and CH pump turns on.

- **CH PRIORITY** in this mode pumps start working when boiler temperature reaches temperature set up in pump start up function. (CH pump works permanently and HSW pump turns on after reaching desired temperature.) In this mode HSW temperature cannot be higher than CH temperature.

- **FUEL TYPE** function allows to select previously adjusted fuel, i.e.: (different calorific value of fuel). Controller is possible to adjust and save four various fuel configurations. More information on adjusting loaded fuel in further part of the manual.

- FLOOR HEATING



Controller is equipped with input supplying the floor pump and temperature sensor which is installed on recycle of floor installation. Floor installation also requires installation of tee valve on boiler output in order to limit temperature of installation supply. This function ensures readout and maintaining constant temperature of floor installation. Turning off the function is performed the same as for other pumps (you should go below minimum temperature and then two horizontal lines shall appear on the screen, confirmation with ENTER button). To start the function again set desired temperature and press the ENTER button.

- MANUFACTURER SETTINGS controller is equipped with programmed settings, you may return to them at any time. However, you should remember that all personal settings will be lost.

- END OF WORK turns the controller off. To turn it on again press and hold ENTER button

Controller has got hidden installation menu, to get there press and hold (▲) and (▼) buttons for 3 seconds. Changes of parameters in that menu should be made by qualified person. Unauthorized changes of those parameters may cause controller misoperation.

INSTALLATION MENU

- TURN OFF TIME function is to set time which is measured when CH temperature does not increase and maintains 5°C below set temperature.

- **MAINTENANCE PAUSE** function enables setting up break time between blower and loader start u in maintenance mode.

- **MAINTENANCE OPERATION** function allows setting up time of blower and loader operation in maintenance mode.

- **BLOWER START-UP** this function consists in setting 100% power of blower with time parameter (1sec. - 15 sec.) which, due to temporary loss of efficiency, has to be regulated. When you notice that the blower does not work correctly during start (it cannot start) you should increase start-up time.

- **ROOM REGULATOR** room regulator may be connected to the controller. It controls CH circulation pump. Two-core cable is led out from room regulator that should be connected to jack input. No external power sources should be connected to the device during installation of room regulator. When function is turned on, an arrow should appear on the display (upper right area). If room regulator is not connected to the device this function should not be turned on.

- **FLUE GAS TEMPERATURE** (option) there is possibility of chimney sensor installation. Function allows to set up maximum threshold of flue gas temperature.

- **WORM TEMPERATURE** this unction protects against fuel ignition in boiler basket. When temperature of the worm increases above set up temperature, loader will start giving the fuel for 10 min. in order not to allow the fuel to ignite in boiler basket.

ADJUSTING THE AMOUNT OF LOADED FUEL

They are two tests, test of minimum and maximum power. Proper setting of those two parameters guarantees efficient operation of the boiler. Test should be carried out for each fuel you intend to use, fuel change requires carrying out new test. Change of minimum power of the blower will cause change of minimum power for each fuel (1,2,3,4). Improper adjustment of the fuel may result in retort loader damage.

- **MIN. BLOWER POWER** function is to set up minimum fan power. Fan should be set up to work at minimum power. However, you should remember that fans lose their factory parameters as a result of use and soil. In that situation you should increase minimal airflow power.

CAUTION!!!
change of this parameter requires new adjustment of amount of loaded fuel, test of minimum power for each fuel type (1,2,3,4).

- **FUEL 1** - Adjustment of amount of loaded fuel.

- **MAX. BLOWER POWER** - this function is to limit maximum airflow power. Maximum power should be limited when used fuel (pellet, oat) is too light and is blown around in combustion chamber due to huge fan power.

- **FUEL LOAD** this function is for quick correction of amount of loaded fuel for minimum an maximum power.

- **MINIMUM POWER TEST** function consists in adjusting the amount of loaded fuel in relation to minimum amount of loaded air forced to the furnace by the blower. During test your task is to set up fuel dose in a way that fuel feeding shoul be directly proportional to combustion. Recommended time of minimum power test is 4 to 5 hrs. Confirmation of parameter causes saving set up parameter in FUEL TYPE menu.

- MAXIMUM POWER TEST function consists in adjusting the amount of loaded fuel in relation to maximum amount of loaded air forced to the furnace by the blower. During test your task is to set up maximum fuel dose in a way that fuel feeding should be directly proportional to combustion. At the moment of carrying out the test boiler operates with maximum power. During test the controller monitors CH temperature. In case of exceeding 80°C controller terminates the test and enters into operation mode. Confirmation of parameter causes saving set up parameter in FUEL TYPE menu.

CAUTION!!!
Electronics company does not bear any responsibilities for improper.

4. Technical data

1. CH temperature adjustment range 35°C - 80°C.
2. HSW temperature adjustment range 35°C - 65°C.
3. HSW floor adjustment range 20°C - 55°C.
4. Automatic blower adjustment.
5. Operation in ambient temperature 0°C - 40°C.
6. Automatic saving of settings during supply voltage decay.
7. Relative air humidity 95%.
8. I insulation class.
9. 7 A fuse.
10. Controller has got function preventing from premature freezing of installation, in case oftemperature decrease below 6°C circulation pump starts up automatically.
11. Controller is equipped with secondary protection (emergency thermostat) which protects the boiler against overheating.

5. Use

1. Connect feeder of CH and HSW pump.
   a) yellow-green conductor to earth terminal,
   b) blue conductor to "N" terminal,
   c) brown conductor to "L" terminal.
2. After connecting the blower, pumps and after installing all sensors turn the controller on. After performing above actions the controller ensures:
   a) maintaining constant temperature of CH boiler set up by user.
   b) automatic start of pumps and blower.
   c) automatic shutdown of the blower and pumps after fuel use up.
   d) continuous readout of temperatures.

6. Error messages

Error 0 - Device failure.
Error 1 - EEPROM memory failure.
Error 2 - CH temperature sensor failure.
Error 3 - HSW temperature sensor failure.
Error 5 - Floor pump sensor failure.
Error 6 - Too high CH temperature.
Error 8 - Too high HSW temperature.
Error 9 - No fuel.

7. Fuse replacement

To replace the fuse disconnect the feeder from the socket.

8. Installation recommendations

1. Controller installation should be entrusted to authorized person.
2. Controller should be placed in location disabling it becoming heated above 40^{o}C.
3. Perform installation in accordance with par. 5 (Use)
4. Device should be installed and operated in accordance with rules of operating electrical devices. Controller must not be exposed to water or to conditions causing steam condensation i.e. rapid changes of ambient temperature.
5. In cases of controller misoperation first check:
   a) the fuse
   b) connections stability and technical condition of cooperating devices, that means the blower, pumps.
   c) Set the controller to manufacturer settings.

6 Boiler should have check valves installed in cycles of CH and HSW pumps.
7. Floor installation requires installation of tee valve on boiler output in order.

CAUTION!!!
Perform connecting blower and circulation pumps motors only after disconnection of the controller from 230V supply network.

9. Electric parameters

1. Supply voltage	~ 230 V / 50 Hz
2. Power consumption (no ratings)	2 W
3. Output ratings:	
blower	100 W
loader	250 W
pumps	
CH	100 W
HSW	100 W
floor	100 W

10. Warranty card

1. Manufacturer guarantees good quality of equipment, guarantee and post-guarantee services.
2. Manufacturer grants the guarantee of failure-free controller operation for the period of 24 month from purchase date.
3. Failures and damages revealed during warranty period shall be eliminated immediately, free of charge within not longer than 14 days from the day of delivering the device for repair at manufacturer location.
4. Shipment costs are incurred by the customer.
5. When making a complaint failure description should be attached.
6. Warranty does not include damages arose due to improper operation by the user or modifications and repairs performed not by service centre.
7. Seller is obliged to fill in the warranty card on the day of giving out the equipment. Warranty card which is not filled in or having any corrections or cross outs precludes exercising warranty rights.

Information on utilization of electric and electronic devices

This symbol placed on products or documentation attached to them informs that unserviceable electric or electronic devices must not be thrown away together with garbage. Proper behaviour in case of necessity of utilization, reuse or components recovery consists in handing over the device to specialized collection point where you shall not be charged. Proper utilization of the device enables preservation of valuable resources and avoidance of negative effect to the health and environment. Detailed information about the nearest collection point may be obtained from your local authorities.

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